able total and low-density lipoprotein cholesterol levels to be less than 200 and 160 mg/dl, respectively, for healthy individuals without multiple coronary risk factors. Coronary heart disease risk, however, decreases at lower levels. To determine whether these levels are vascular biologically desirable, we assessed flow-mediated (endothelium-dependent) brachial artery vasoactivity noninvasively before, during, and following cholesterol lowering (simvastatin 10 mg/day) in 7 healthy, middle-aged men. Flow-mediated brachial artery vasoactivity was measured using 7.5 MHz ultrasound and expressed as % diameter change from baseline to hyperemic conditions (1 minute following 5 minutes of blood pressure cuff arterial occlusion). Flow-mediated vasoactivity rose from 5.0 ± 3.6% at baseline to 10.5 ± 5.6, 13.3 ± 4.3 and 15.7 ± 4.9% (all $p < 0.05$) as cholesterol fell from 200 ± 12 to 161 ± 18, 169 ± 16, and 153 ± 11 mg/dl after 2, 4 and 12 weeks, respectively, of cholesterol lowering therapy. Vasoactivity and cholesterol returned to baseline levels 12 weeks after simvastatin discontinuation. Overall, vasoactivity was found to correlate inversely with cholesterol levels ($r = -0.47$, $p = 0.004$). These data suggest that flow-mediated brachial artery vasoactivity responds rapidly to changes in cholesterol levels and that vascular biologically desirable cholesterol levels may be lower than those recommended by current guidelines for healthy, middle-aged men.

752 Attempts to Improve Treatments for Acute Myocardial Infarction

Tuesday, March 26, 1996, 2:00 p.m.–3:30 p.m.
Orange County Convention Center, Room 209

2:00

752-1 Thrombolysis With Saruplase Is at Least as Effective in AMI as Streptokinase: COMPASS Double-Blind Study in 3089 Patients

Ulrich Tebbe, Rolf Michels, Jennifer Adgey, Amadeu Betriu, Abraham Caspi, Bernard Charbonnier, William Fennell, Mikhail Ruda, Johannes Mlczoch, Jean Boland, Ricardo Seabra-Gomes, Jürgen Windeler, Robert Groves, Gwyn Hopkins, Hannes Barth for the COMPASS Study Group. *Detmold, Germany*

Saruplase (SAR) restores patency quicker than streptokinase (SK) in AMI pats. (PRIMI Study). To show equivalence in 30 d mortality rates in this study, AMI pats. with < 6 h symptoms were randomised to SAR (20 mg bolus, 60 mg/l h; heparin iv bolus 5000 IU before) or SK (1.5×10^6 IU/1 h) between 8/92 and 7/94. Aspirin po and heparin iv for > 24th were routine. 104 hospitals in 10 West European countries Israel and Russia entered 3089 pats. (3088 evaluable, > 99.9%).

Results	SAR (n = 1542)	SK (n = 1547)	Absol. diff.	95% C.I.
30 d mortality	88 (5.7%)	104 (6.7%)	−1.0%	−2.8 to 0.8
– cardiac related°	69 (4.5%)	94 (6.1%)	−1.6%	−3.2 to 0.0
– involving stroke°	13 (0.8%)	10 (0.6%)	0.2%	−0.5 to 0.9
Strokes (to d 12)	19 (1.2%)	17 (1.1%)	0.1%	−0.7 to 1.0
– hemorrhagic	11 (0.7%)	4 (0.3%)	0.5%	−0.1 to 1.0
– thrombo-embolic	5 (0.3%)	12 (0.8%)	−0.5%	−1.0 to 0.1
– unclassif. (no CT)	3 (0.2%)	1 (0.1%)	0.1%	−0.2 to 0.4
30 d mortality or disabling stroke	90 (5.8%)	107 (6.9%)	−1.1%	−2.9 to 0.7

°not mutually exclusive

Conclusions: 30 day mortality rates show that SAR is as least as efficacious as SK ($p < 0.001$; test for equivalence: OR < 1.5). Overall stroke rates are similar, but may differ for different etiologies. Combining (all cause) 30 d mortality and disabling stroke suggests that the apparent advantage of saruplase therapy is maintained.

2:15

752-2 High Hospital Mortality Despite a Frequent Use of Thrombolysis in Acute Myocardial Infarction

J. Rustige, R. Schiele, U. Burczyk, A. Koch[1], U. Tebbe[2], J. Senges for the ALKK Study Group. *Herzzentrum Ludwigshafen, Cardiology, Germany; [1] ZMBT Heidelberg, Germany; [2] Klinikum Lippe-Detmold, Germany*

"The 60-Minutes Myocardial Infarction Project" is a German multi-center study to reduce prehospital delay (PHD) and and increase the rate of thrombolysis in AMI. This paper evaluates the routine use of drugs in the early treatment and the hospital mortality of AMI.

Methods: From 7/92 to 9/94 all pts with transmural AMI presenting within the first 96 hours in 136 hospitals were registered (n = 14.980, mean age 68 ± 13 yrs, 68% male, 48% anterior wall MI, 19% reinfarctions). PHD delay, treatment regimen, early and total mortality were documented.

Results: 1. Thrombolysis was given in 53% of pts with AMI; of these, 66% received streptokinase, 18% rt-PA and 9% urokinase. 2. Early mortality in the coronary care unit (48 h) was 7.6%. 3. Total hospital mortality (22 d) was 17.2%. 4. Median PHD was 2.8 h, 16.7% of pts arrived within 1 h after onset of symptoms (hospital mortality 15.1%). 4. Use of early medical treatment Lysis rate within the first hour after onset of symptoms was 78%, after 12 h PHD 11.8%. In a logistic regression model strong predictors for thrombolysis were diagnostic ECG, cardiogenic shock and male gender.

Drugs	Thrombolytics	β-blocker	ASS	Heparin
Frequency	53%	16%	81%	83%

Conclusions: In Germany more than half of the pts with transmural AMI are treated with thrombolytics, the majority of pts still receive streptokinase. 2. Mortality is twice as high as reported in randomized megatrials because no pts were excluded. 3. Betablocker therapy is given in a minority of pts despite ist documented benefit.

2:30

752-3 Low Molecular Weight Heparin (Fragmin®) in Acute Myocardial Infarction

Frederic Kontny, Jon Dale, Ulrich Abildgaard, Terje Pedersen for the FRAMI Study Group. *Aker University Hospital, University of Oslo, Oslo, Norway*

The objective of the trial was to study the efficacy and safety of Fragmin® (Pharmacia, Sweden) in prevention of left ventricular thrombus (LVT) formation and arterial embolism (AE) after acute anterior myocardial infarction (AMI). The trial design was placebo-controlled, randomised, double-blind and multicentral. Fragmin® (150 IU/kg BW b.i.d.) was given until pre-discharge echocardiography (2DE) at day 9 ± 2. The 2DE recordings were centrally evaluated. AE, reinfarction, mortality and haemorrhages were recorded continuously throughout hospitalisation. Only aspirin was allowed as adjunctive antithrombotic treatment.

Results: 776 patients were randomised in the trial. Streptokinase and aspirin were given to > 90 percent of the patients. Other important concomitant treatment as well as baseline characteristics did not differ between the groups. The results are based on intention-to-treat analyses.

Endpoint	Fragmin®	Placebo	P
LVT	13.3%	21.9%	0.022
AE	1.8%	1.4%	ns
Reinfarction	1.6%	2.2%	ns
Mortality	5.9%	5.9%	ns
Major bleeding	2.9%	0.3%	0.006

Conclusions: Fragmin® was associated with a significant reduction in LVT formation after AMI. The numbers of arterial embolism and reinfarctions were low with no difference between the treatment groups. Furthermore, there was no difference in mortality rates between the groups. However, Fragmin® was associated with a significant increase in major bleeding.

2:45

752-4 Differences in Outcome After Angioplasty for Acute Myocardial Infarction: The Left Anterior Descending Artery vs. the Right Coronary Artery

Barry M. Kaplan, Robert D. Safian, Cindy L. Grines, Venu M. Reddy, William W. O'Neill. *William Beaumont Hospital, Royal Oak, Michigan*

A comparison of left anterior descending (LAD, n = 232) and right coronary (RCA, n = 227) angioplasty (PTCA) in a group of 459 consecutive patients presenting with myocardial infarction to our institution was performed. Seventeen (7.4%) patients in each group had thrombolytic failure (p = NS).

	LAD	RCA	p value
Procedural Events			
Bradyarrhythmias	2 (0.8%)	19 (8.4%)	<0.0001
Defibrillation	4 (1.7%)	13 (5.7%)	<0.02
Major dissection	6 (2.6%)	8 (3.5%)	NS
Persistent thrombus or no-reflow	10 (4.3%)	20 (8.8%)	<0.05
Major angiographic events	17 (7.3%)	31 (13.7%)	<0.03
Clinical Events			
Abrupt Closure	16 (6.9%)	17 (7.5%)	NS
Bypass surgery	8 (3.4%)	4 (1.8%)	NS
Mortality without shock	6 (3%)	3 (1.5%)	NS
Cardiogenic shock mortality	19/33 (57.6%)	7/31 (22.6%)	<0.005
Total death	25 (10.8%)	10 (4.4%)	<0.01
Major clinical events	42 (18%)	22 (10%)	<0.01